



## How fire history, fire suppression practices and climate change affect wildfire regimes in Mediterranean landscapes

**Author(s):** Brotons L, Aquilue N, de Caceres M, Fortin MJ, Fall A  
**Year:** 2013  
**Journal:** PLoS One. 8 (5): e62392

### Abstract:

Available data show that future changes in global change drivers may lead to an increasing impact of fires on terrestrial ecosystems worldwide. Yet, fire regime changes in highly humanised fire-prone regions are difficult to predict because fire effects may be heavily mediated by human activities. We investigated the role of fire suppression strategies in synergy with climate change on the resulting fire regimes in Catalonia (north-eastern Spain). We used a spatially-explicit fire-succession model at the landscape level to test whether the use of different firefighting opportunities related to observed reductions in fire spread rates and effective fire sizes, and hence changes in the fire regime. We calibrated this model with data from a period with weak firefighting and later assess the potential for suppression strategies to modify fire regimes expected under different levels of climate change. When comparing simulations with observed fire statistics from an eleven-year period with firefighting strategies in place, our results showed that, at least in two of the three sub-regions analysed, the observed fire regime could not be reproduced unless taking into account the effects of fire suppression. Fire regime descriptors were highly dependent on climate change scenarios, with a general trend, under baseline scenarios without fire suppression, to large-scale increases in area burnt. Fire suppression strategies had a strong capacity to compensate for climate change effects. However, strong active fire suppression was necessary to accomplish such compensation, while more opportunistic fire suppression strategies derived from recent fire history only had a variable, but generally weak, potential for compensation of enhanced fire impacts under climate change. The concept of fire regime in the Mediterranean is probably better interpreted as a highly dynamic process in which the main determinants of fire are rapidly modified by changes in landscape, climate and socioeconomic factors such as fire suppression strategies.

**Source:** <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3642200>

### Resource Description

#### Exposure :

weather or climate related pathway by which climate change affects health

Ecosystem Changes, Extreme Weather Event, Temperature

**Extreme Weather Event:** Wildfires

**Temperature:** Fluctuations

#### Geographic Feature:



resource focuses on specific type of geography

Other Geographical Feature

**Other Geographical Feature** : shrub lands and wild lands

**Geographic Location:** A small icon representing a location or map.

resource focuses on specific location

Non-United States

**Non-United States:** Europe

**European Region/Country:** European Country

**Other European Country** : Spain

**Health Impact:** A small icon representing health or a person.

specification of health effect or disease related to climate change exposure

Health Outcome Unspecified

**Mitigation/Adaptation:** A small icon representing a mitigation or adaptation strategy.

mitigation or adaptation strategy is a focus of resource

Adaptation, Mitigation

**Resource Type:** A small icon representing a resource or document.

format or standard characteristic of resource

Research Article

**Timescale:** A small icon representing a timescale or clock.

time period studied

Time Scale Unspecified

**Vulnerability/Impact Assessment:** A small icon representing vulnerability or impact assessment.

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content